In the Claims

Please examine the present application based on the following list of claims:

1. **(Original)** A gasketless fluidic interface comprising:
a microfluidic device having a plastically deformable outer layer defining a first aperture, the device further having an internal microfluidic channel disposed substantially parallel to the outer layer and in fluid communication with the first aperture;
a retractable element including a mating surface having a raised feature protruding from the mating surface; and
means for compressing the raised feature into the outer layer to plastically deform the outer layer and prevent unintended fluidic leakage between the mating surface and the outer layer adjacent to the first aperture without collapsing the internal microfluidic channel.

2. **(Original)** The fluidic interface of claim 1 wherein the mating surface defines a second aperture and wherein the raised feature comprises a continuous raised feature surrounding the second aperture.

3. **(Original)** The fluidic interface of claim 1 wherein the microfluidic device is adapted to perform pressure-driven high performance liquid chromatography.

4. **(Original)** The fluidic interface of claim 1 wherein the outer layer comprises a material that is substantially non-absorptive of, and is substantially non-degrading when placed into contact with, chemicals selected from the group consisting of: water, methanol, ethanol, isopropanol, acetonitrile, ethyl acetate, and dimethyl sulfoxide.

5. **(Original)** The fluidic interface of claim 1 wherein the outer layer is adhesivelessly bound to the microfluidic device.

6. **(Original)** The fluidic interface of claim 1 wherein the outer layer comprises a substantially optically transmissive material.

7. **(Original)** The fluidic interface of claim 1 wherein the outer layer comprises a polyolefin material.

8. **(Original)** The fluidic interface of claim 1 wherein the mating surface comprises a first material having a first hardness, the outer layer comprises a second material having a second hardness, and the first hardness is greater than the second hardness.

9. **(Original)** The fluidic interface of claim 1 wherein the compressing means comprises a moveable element selected from the group consisting of: a pneumatic piston, a hydraulic piston, a rotary screw, a solenoid, and a linear actuator.

10. **(Original)** The fluidic interface of claim 1 wherein the compressing means is capable of applying a compressive force and translating any of the mating surface or the outer layer by a distance, the fluidic interface further comprising a sensor for sensing any of the magnitude of the compressive force and the translation distance.

11. **(Original)** A gasketless fluidic interconnect comprising:

a substantially planar microfluidic device having a plurality of device layers and defining an internal microfluidic channel, the plurality of device layers including a plastically deformable outer layer defining a first aperture in fluid communication with the internal microfluidic channel;

a retractable mating surface having a protruding feature aligned with the first aperture; and

an actuator adapted to depress at least a portion of the protruding feature into, and to plastically deform, the outer layer adjacent to the first aperture to provide sealing engagement between the outer layer and the mating surface.

12. **(Original)** The fluidic interconnect of claim 11 wherein the microfluidic device is operated at an elevated internal operating pressure, and sealing engagement is maintained between the outer layer and the mating surface at an operating pressure of at least about 100 psi.

13. **(Original)** The fluidic interconnect of claim 11 wherein the microfluidic device is operated at an elevated internal operating pressure, and sealing engagement is maintained between the outer layer and the mating surface at an operating pressure of at least about 500 psi.

14. **(Original)** The fluidic interconnect of claim 11 wherein the mating surface defines a second aperture, the protruding feature defines a continuous outer perimeter, and the second aperture is disposed within the continuous outer perimeter.

15. **(Original)** The fluidic interconnect of claim 11 wherein the microfluidic device is adapted to perform pressure-driven high-performance liquid chromatography.

16. **(Original)** The fluidic interconnect of claim 11 wherein each of the outer layer and the mating surface comprises at least one material that is substantially non-absorptive of, and is substantially non-degrading when placed into contact with, chemicals selected from the group consisting of: water, methanol, ethanol, isopropanol, acetonitrile, ethyl acetate, and dimethyl sulfoxide.

17. **(Original)** The fluidic interconnect of claim 11 wherein the outer layer comprises a substantially optically transmissive material.

18. **(Original)** The fluidic interconnect of claim 11 wherein the outer layer comprises a polyolefin material.

19. **(Original)** The fluidic interconnect of claim 11 wherein the mating surface comprises a first material having a first hardness, the outer layer comprises a second material having a second hardness, and the first hardness is greater than the second hardness.

20. **(Original)** The fluidic interconnect of claim 11 wherein the actuator comprises any of a pneumatic piston, a hydraulic piston, a rotary screw, a solenoid, and a linear actuator.

21. **(Original)** The fluidic interconnect of claim 11 wherein the actuator is capable of applying a compressive force and translating any of the mating surface or the outer layer by a distance, the fluidic interface further comprising a sensor for sensing any of the magnitude of the compressive force and the translation distance.

22. **(Original)** A method for interfacing with a microfluidic device, the method comprising the steps of:

providing a multi-layer, substantially planar microfluidic device defining an internal microfluidic channel and having a plastically deformable outer layer, the outer layer defining an first aperture in fluid communication with the channel;

providing a mating surface having at least one protruding feature;

aligning the protruding feature with the aperture; and

depressing at least a portion of the protruding feature into the outer layer to plastically deform the outer layer adjacent to the aperture and thereby prevent unintended leakage between the mating surface and the outer layer.

23. **(Original)** The method of claim 22 wherein the at least one protruding surface defines a second aperture, the method further comprising the step of either supplying or receiving a pressurized fluid through the second aperture.

24. **(Original)** The method of claim 22 wherein the depressing step includes the application of a compressive force, the method further comprising the step of sensing the magnitude of the compressive force, wherein the depressing step is responsive to the sensing step.

25. **(Original)** The method of claim 22 wherein the depressing step includes translating any of the mating surface or the outer layer by a distance, the method further

comprising the step of sensing the translation distance, wherein the depressing step is responsive to the sensing step.

26. **(Original)** A system for performing high throughput pressure-driven liquid chromatography, the system comprising:

a microfluidic device having a plastically deformable outer layer defining a plurality of apertures, the device further having a plurality of parallel separation columns in fluid communication with the plurality of apertures;

a retractable seal plate including a mating surface having a plurality of raised features protruding from the mating surface; and

an actuator adapted to depress at least a portion of the plurality of raised features into, and to plastically deform, the outer layer adjacent to the plurality of apertures to provide sealing engagement between the outer layer and the mating surface.

27. **(Original)** The system of claim 26, further comprising at least one pressure source in fluid communication with the plurality of parallel separation columns.

28. **(Original)** The system of claim 27, further comprising a fluidic distribution network permitting fluid communication between the at least one pressure source and the plurality of separation columns.

29. **(Original)** The system of claim 28 wherein the fluidic distribution network is disposed within the microfluidic device.

30. **(Original)** The system of claim 26 wherein each of the outer layer and the mating surface comprises at least one material that is substantially non-absorptive of, and is substantially non-degrading when placed into contact with, chemicals selected from the group consisting of: water, methanol, ethanol, isopropanol, acetonitrile, ethyl acetate, and dimethyl sulfoxide.

31. **(Currently Amended)** A method for manufacturing a fluidic seal plate comprising a plurality of aperture-defining raised annular features protruding from a first surface, the method comprising the steps of:

providing a workpiece;

providing an endmill including a cutting surface having a center, the ~~at least one~~ cutting surface defining at least two indentations disposed substantially equidistantly from the center;

rotary cutting the workpiece using the endmill to expose the first surface at a first location and to define a first raised annulus protruding from the first surface;

rotary cutting the workpiece using the endmill to expose the first surface at a second location and to define a second raised annulus protruding from the first surface; and

defining a first aperture and a second aperture in the first surface, the first aperture being surrounded along the first surface by the first raised annulus and the second aperture being surrounded along the first surface by the second raised annulus.